HF wastewater remediation by electrocoagulation process

S. Aoudja, A. Khelifa, N. Drouiche, M. Hecini

ABSTRACT

Wastewater from surface treatment of silicon wafers is rich in fluoride ions. This is attributed to the use of hydrofluoric acid in huge quantities during stripping operation. Lime precipitation is insufficient to comply with environmental standards. In this work, the electrocoagulation (EC) was used for polishing treatment after neutralizing step. Synthetic solutions were used for the investigation into main operational factors affecting fluoride removal performance such as electrode material, initial pH, current density, salt nature, etc. The experimental results showed that EC is efficient for the removal of fluoride ions. This performance is ascribed to the effect of anodically generated coagulants. A removal efficiency of more than 99% of fluoride may be obtained. The quality of the effluent water met the specifications for the national discharge standard.

Keywords: Photovoltaic cell; HF wastewater; Fluoride removal; Electrocoagulation